

Appl. No.08/952,741

**REMARKS**

Prior to filing of this paper, claims 2-7, 9 and 11-24 were pending in the application. This paper cancels claims 9, 11 and 17-19, as these claims are withdrawn from consideration. This paper also cancels claim 14 as duplicative of claim 5. Claims 2-7, 12, 13, 15, 16 and 20-24 are thus left pending. Claims 12 and 13 stand allowable.

An interview with the Examiner was conducted to review Applicants' Amendment filed February 12, 2002. In that interview, the Examiner indicated that she could not enter the paper of February 12, 2002 because the amendment of claims 23 and 24, to introduce SEQ ID NO: 5, introduced a sequence that had not been searched before. Additional discussion revealed some further problems, all of which it is believed are addressed in this further paper.

As the Amendment of February 12, 2002 was not entered, Applicants repeat here the substantive remarks presented in that paper.

The present application is under appeal and an Appeal Brief was filed on October 31, 2001. The Examiner has mailed a Notification of Non-Compliance with 37 CFR 1.192(c) in reply to the Appeal Brief. The Notification indicated as the reasons for its issuance that, There is no separate heading or any discussion of 112, 2<sup>nd</sup> paragraph and 103(a) rejections. Not all appealed claims are listed in the appendix. The withdrawn claims

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are not mentioned. Applicants do not argue 112, 2<sup>nd</sup> paragraph and 103(a) rejections made in the Final Office action mailed December 4, 2000. Note that the AF amendment filed May 31, 2001 was not entered, therefore claims 2, 5-7 and 14 stand rejected under 112, 2<sup>nd</sup> paragraph. Applicants argue as the AF amendment of May 31, 2001 were entered with regard to claims 2-7, 14-16, 20 and 21 and if it were not entered with regard to claims 22-24. **Applicants may wish to file an AF amendment to present claims 2 and 5-7 in a patentable form.** (Emphasis added.)

Applicants first would point out that the Advisory Action of June 7, 2001, is somewhat confusing; it states that the response filed May 31, 2001, had "been considered with the following effect," among which was the checking of a box indicating that the rejection of claims 2, 5-7 and 14 under 112, 2<sup>nd</sup> paragraph had been overcome. Thus, it appeared that the amendment of those claims had been accepted and that no further comment on that rejection was needed.

Notwithstanding that confusion, Applicants here take the Examiner's suggestion of presenting an Amendment that completely addresses the issues under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph raised by claims 2, 4-7, 14 and 22-24. This paper also cancels the withdrawn claims 9, 11 and 17-19. Entry of these amendments is respectfully requested as it places the application into much better form for appeal.

Specifically, the amendments to claim 2 removes the recitation that any enzymatic activity is associated with a nucleotide sequence and clarifies that the activity is associated with the encoded protein. Applicants believe that this amendment places claims 2 and 5-7 (and claim 4 to the extent it is dependent upon claim 2) into condition for allowance, thus effecting the suggestion of the Examiner.

The amendments to claim 3 are merely editorial in nature. They clarify the language of the claim without reducing its scope and also correct some spelling errors.

The amendments to claim 4 correct a spelling error, and clarify the language of the claim by use of the definite article and by indicating that the additional

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sequences recited in the claim functions in regulating expression of the isolated DNA of claim 2 or claim 3.

The amendment to claim 20 clarifies that the isoelectric point of the encoded protein is higher than 8.5, in accord with the specific suggestion of the Examiner at page 2 of the Office Action of May 24, 2000.

Claims 23 and 24 are amended to properly recite that the DNA molecule claimed encodes an enzyme; the sequence identifiers recited in claims 22-24 are either oriented in the "sense" direction and therefore encode amino acids (primers A, 1, 4, 5 and 7, SEQ ID Nos. 10, 3, 6, 7, and 9, respectively), or are oriented in the "antisense" direction and therefore are indicated as encoding amino acids as their reverse complements (primers B, 2, 3 and 6, SEQ ID Nos. 11, 4, 5 and 8, respectively). The Examiner is referred to Figure 1, Figure 3 and the Sequence Listing.

Claim 22 in unamended form properly recites the orientation of the primers. In claims 23 and 24, amended herein, SEQ ID NO. 5, corresponding to primer 3, was at first incorrectly identified as SEQ ID NO. 3, corresponding to primer 1. Thus, the standing rejection of claims 22-24 under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph is addressed. Furthermore, the broadening of the scope of claims 22-24 by removal of the limitation that the claimed DNA encode a functional protein, which broadening led to the decision by the Examiner not to enter the Amendment presented May 31, 2001, is avoided.

In a telephone interview conducted with the Examiner on February 6, 2002, the Examiner suggested further amendments be made to the claims so they recite "an isolated DNA molecule". Such amendments are made herein. Furthermore, claims 14-16 are amended to change the term "containing" to the more typical transitional term "comprising".

Applicants submit that the present amendments completely address all issues outstanding under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, and thus places the present application into better condition for appeal by removing an issue for consideration. Furthermore, claims 2 and 5-7 are believed to be placed into condition for allowance by the amendment to claim 2.

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In the interview of February 13, 2002, it was discovered that Applicants' Representative's understanding of the relationship of some primers recited in claim 22 to the coding direction was in error. This erroneous understanding led to the attempt to introduce the phrase "the reverse complement of a sequence". Applicants' Representative notes that none of the prior amendments to claim 22 has been entered. Thus, claim 22, prior to amendment herein, has the language as filed on September 25, 2000. The amendment to claim 22 made herein merely introduces the phrase "An isolated" (DNA molecule) to the claim as requested by the Examiner. Applicants submit that claim 22 in such form has been searched and therefore this amendment introduces no new issue for consideration.

As the Examiner suggested in the interview, the new sequence of SEQ ID NO: 5 is removed from claims 23 and 24 to remove the requirement for new search to examine those claims. Also, claim 14 is canceled, as it was discovered that claim 14 duplicated claim 5. Finally, claim 2 is further amended to correct the designation of "Sequence No. 2" to "SEQ ID NO: 2".

It is believed that the present Amendment now places claims 2 and 5-7 into condition for allowance. It is further believed that all of the issues under 35 U.S.C. § 112, second

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paragraph are overcome. The Examiner is respectfully requested to take the favorable action of entering this Third Reply Under 37 CFR 1.116 and issuing an Advisory Action indicating the new status of the claims. Applicants believe that the status of the claims should be that claims 2, 5-7, 12 and 13 should be indicated as allowable and the rejection of claims 2, 4-7, 14, 16, (22), 23 and 24 under 35 U.S.C. § 112, second paragraph should be indicated as overcome.

If the Examiner has any questions concerning this application, the Examiner is requested to contact the undersigned at the telephone number below.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for an additional month extension of time, to April 11, 2002, for filing a reply in connection with the present application. The required fee of \$290.00 for extension of time to March 11, 2002 was paid with the Second Reply Under 37 CFR 1.116 filed on February 12, 2002. The required fee of \$290.00 is paid by charge to Deposit Account No. 02-2448.

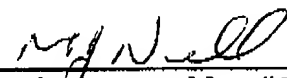
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any over-payment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By

  
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VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS:

The claims have been amended as follows:

2. (Four times Amended) [A] An isolated DNA molecule, [have  $\alpha$ -amylase activity which] that encodes the amino acid sequence described in [Sequence No.] SEQ ID NO: 2 or a fragment thereof having  $\alpha$ -amylase activity.

3. (Twice Amended) [A] An isolated DNA molecule encoding a protein exhibiting alkaline liquefying  $\alpha$ -amylase activity at a pH optimum of 8-9 and possessing an amino acid sequence obtained by modifying an amino acid sequence described in SEQ ID NO: 2 [Sequence No. 2] in a manner in which one or more amino acids are substituted, deleted, or inserted without changing the enzymological properties of the protein having said amino acid sequence described in SEQ ID NO:2 [such that the sequence of the substituted, added, deleted, or inserted amino acid is equivalent in activity to the amino acid sequence of Sequence No. 2] and the protein hydrolyzes 1,4- $\alpha$ -glucosidic linkages in starches, amylose, amylopectin, and degradation products thereof and in amylose forms: glucose (G1), maltose (G2), maltotriose (G3), maltotetr[a]ose (G4), maltopent[a]ose (G5) and maltohex[a]ose (G6) and does not hydrolyze

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4. (Twice Amended) [A] The DNA [molefule] molecule of claim 2 or 3, further comprising a nucleotide sequence for regulating expression [of a gene] of said isolated DNA molecule.

15. (Amended) A recombinant DNA molecule [containing] comprising the isolated DNA molecule of claim 3.

16. (Amended) A recombinant DNA molecule [containing] comprising the isolated DNA molecule of claim 4.

20. (Amended) The DNA molecule of claim 3, wherein said encoded protein has an isoelectric point higher than [of] 8.5 when measured by isoelectric focusing electrophoresis.

22. (Amended) [A] An isolated DNA molecule encoding a protein exhibiting alkaline liquefying  $\alpha$ -amylase activity at a pH optimum of 8-9 comprising at least one nucleotide sequence that is selected from the group consisting of SEQ ID NO: 10, SEQ ID NO: 7, SEQ ID NO: 3, SEQ ID NO: 6 and SEQ ID NO: 9.



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23. (Amended) [A] An isolated DNA molecule encoding a protein exhibiting alkaline liquefying  $\alpha$ -amylase activity at a pH optimum of 8-9 comprising at least one nucleotide sequence that is the reverse complement of a sequence selected from the group consisting of SEQ ID NO: 8, [SEQ ID NO: 3,] SEQ ID NO: 4 and SEQ ID NO: 11.

24. (Amended) [A] An isolated DNA molecule encoding a protein exhibiting alkaline liquefying  $\alpha$ -amylase activity at a pH optimum of 8-9 comprising at least one nucleotide sequence selected from the group consisting of SEQ ID NO: 10, SEQ ID NO: 7, SEQ ID NO: 3, SEQ ID NO: 6 and SEQ ID NO: 9, and also comprising at least one nucleotide sequence that is the reverse complement of a sequence selected from the group consisting of SEQ ID NO: 8, [SEQ ID NO: 3,] SEQ ID NO: 4 and SEQ ID NO: 11.